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PATENT Attorney Docket No. 401585/BRAUN

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

ULRICH JOOS

For:

Art Unit: Unassigned

Application No. Unassigned

Examiner: Unassigned

Filed: March 14, 2002

SCREW-TYPE INTRAOSSEOUS

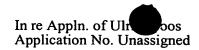
DENTAL IMPLANT

PENDING CLAIMS AFTER ENTRY OF PRELIMINARY AMENDMENT

1. A dental implant comprising:

- a) a bottommost implant tip located at an apex;
- b) a root part which extends to the implant tip (1), is intended to be fitted in a jawbone, and has a parabolic outer contour with the implant tip as vertex;
- an implant neck adjoining the root part, which extends in the coronal direction and is intended to lie inside the gingiva; and
- d) an outer thread provided on the root part, wherein
 - e) the root part has the parabolic outer contour along its entire length (l_{max}) and as far as a theoretical ridge line at which it adjoins the implant neck.
- 2. The dental implant as claimed in claim 1, wherein
- a) the outer thread provided on the root part has an outer contour extending parallel to the parabolic outer contour of the root part, and
- b) ends at a distance of 1 mm to 4 mm from the ridge line.
- 3. The dental implant as claimed in claim 1, wherein
- a) the root part at the ridge line has a maximum radius (r_{max}) extending in the radial x-direction;
- b) the parabolic outer contour, placed in a cartesian system of x-y coordinates, with the implant tip positioned at the origin, follows the equation $l_y = K \cdot 4r_x^2$, where
- c) l_y represents the respective ordinate value and r_x represents the associated abscissa value; and
- d) the constant (K) results from the equation:

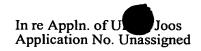
 $K = l_{max} : 4r_{max}^2.$



- 4. The dental implant as claimed in claim 3, wherein the maximum radius (r_{max}) is between 1 mm and 3 mm,
- 5. The dental implant as claimed in claim 1, wherein
- a) the outer thread is self-cutting;
- b) the length (l_{max}) of the root part correlates with a pitch (S) of the outer thread;
- c) the outer thread ends at a distance, in the range of from 1 mm to 4 mm, from the ridge line; with
- d) the distance being greater as the length (l_{max}) of the root part increases.
- 6. The dental implant as claimed in claim 5, wherein the length (l_{max}) of the root part and the pitch (S) of the outer thread, given a maximum radius $(r_{max}) = 2$ mm, correlate with one another as follows:

Length (l _{max})of root part (2) [mm]	Pitch (S) [mm]
6	0.65
8	1
10	1
14	1
16	1

- 7. The dental implant as claimed in claim 1, wherein the outer thread includes thread teeth,
- a) the thread teeth at the root part extend in the y- direction, and have a height (g_h) of about 0.3 mm; and
- b) the thread teeth in the x-direction, have a length (g_l) in the range of from 0.25 mm to 0.5 mm.
- 8. The dental implant as claimed in claim 7, wherein
- a) the maximum radius is 2 mm;
- b) the length (g₁) of the thread teeth decreases as the length (l_{max}) of the root part (2) increases; and
- c) the outer thread with its thread teeth has the following values:



Length (l _{max}) of root part [mm]	Height (g _h) of thread teeth [mm]	Length (g _l) of thread teeth [mm]
6	0.3	0.4
8	0.3	0.4
10	0.3	0.3
14	0.3	0.25
16	0.3	0.25

- 9. The dental implant as claimed in claim 1, wherein
- a) the implant is made of biocompatible material; and
- b) the root part has a rough surface which is plasma-coated or ceramic-coated or is treated chemically, electrochemically, mechanically or by laser.
- 10. The dental implant as claimed in claim 1, wherein the implant neck
- a) is made of titanium, a titanium-based alloy or another biocompatible metal or its alloy and is polished; or
- b) is coated with ceramic, glass ceramic, ceramic-like material, hydroxyapatite, plastic or metal.
- 11. The dental implant as claimed in claim 1, wherein
- a) measured in the y-direction, the implant neck has a height (h) in the range of from 1 mm to 3 mm; and
- b) the implant neck is cylindrical or is widened or narrowed in a trumpet shape or conically in the coronal direction.
- 12. The dental implant as claimed in claim 4, wherein the maximum radius is from about 1.5 mm to about 2 mm.
- 13. The dental implant as claimed in claim 9, wherein the biocompatible material comprises titanium-based alloys, metals, metal alloys, ceramic, glass ceramic, ceramic-like material or plastic.